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PATENT & TRADEMARK OFFICE

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:

John R Fyson

For

METHOD OF TREATING WASTE EFFLUENT

Serial No. US 08/795,961

Filed February 04, 1997

ATTORNEY DOCKET 71442JLT

Examiner: N McCarthy

Group Art Unit: 1300

I hereby certify that this correspondence is being deposited today with the United States Postal Service as first class mail in an envelope addressed to Assistant Commissioner for Patents, Washington, D.C. 20231.

Sherryl A. Payne

Date: October 4, 1999

Hon. Assistant Commissioner for Patents
Washington, D.C. 20231
Attn. Box AF

Sir:

REPLY BRIEF

This is a supplementary appeal brief to the Board of Appeals and Interferences from a Final Rejection in the captioned application dated August 21,1998. This brief is necessitated by "new points of argument" raised in the Examiner's Answer of 30 July 1999.

1. The Examiner states on page 3, lines 13-15 and page 5, lines 12-14 of his Answer that Yan, (U.S. Patent No. 5,552,063), discloses a process that is **analogous** to the process of DE 36 35 219 A1 (Reiβner et al.) because both processes solve the same problem in substantially the same manner, which is treating waste water containing reduced substances by catalytic oxidation. He states that therefore it would have been obvious to one of ordinary skill in the art

to have included a support for the catalyst in the process of DE 36 35 219 A1, in view of Yan, in order to catalytically oxidise reduced substances in waste water while minimizing the discharge of toxic transition metals into the treated waste effluent.

Appellant does not agree that the processes disclosed in these two documents are analogous, nor that they solve the same problem in substantially the same manner, except in the very broadest sense common to numerous patent specifications.

The problem to be solved by Yan was the reduction of offensive substances, specifically including phenol, cresol and ammonia, from wastewater streams, especially petroleum refinery waste, without emitting undesirable amounts of catalytic material into the treated water. His solution was the incorporation of a combination of metals or metal compounds onto a support, such as an ion exchange resin or activated carbon through which the waste water was pumped. This process required the application of heat of at least 50°C and generally proceeded under pressure.

Thus the Yan process is a 3-phase process involving a gaseous phase (oxygen), a liquid phase (waste water) and a solid phase (support), i.e. it is a form of "wet air oxidation" (see col.2 lines 13-21), making it necessarily mechanically cumbersome.

The primary object of the method of Reißner et al. was the oxidation of photographic waste, specifically containing, in contrast to the prior art, only **low** concentrations of thiosulphate, by the use of hydrogen peroxide in the absence of either alkali or the application of heat. Their solution was to catalyse the process using a solution of catalytic amounts of certain heavy metal compounds, specifically ammonium molybdate. A further object was said to enable discharge of waste water into the environment. It will be appreciated, however, that at the time of filing that application (1986) there were far less stringent controls over environmental waste than there were 10 years later, at the priority date of the present application (1996).

The method of Reißner et al is a 1-phase process involving liquids only, carried out at room temperature and at atmospheric pressure, which is attractive

for its simplicity but has the disadvantage that unacceptable level of transition metal contaminants are discharged into the environment.

In contrast the Appellant's claimed method is a 2-phase process involving the use of liquid waste water and hydrogen peroxide and of a heavy metal compound, selected from a molybdate, tungstate, chromate or vanadate, adsorbed on a solid ion exchange resin.

It is respectfully submitted that the 3-phase and 1-phase processes of the prior art, conducted under such different conditions, are not analogous, and the problems to be solved are different, as are their solutions. Nor do either of these prior art processes separately or in combination render obvious the 2-phase process disclosed in the specification of the captioned application.

2. On page 5, line 18 to page 6 line 5 of his Answer the Examiner states that "One of ordinary skill in the art of waste water treatment would have been expected, upon practicing the invention of Reiβner et al., to have looked at the art of waste water treatment by catalytic oxidation to solve the problem of introducing undesirable substances from the metal catalysts into the treated effluent. One of ordinary skill in the art would have been **motivated** to have modified the process of Reiβner et al. by including the catalyst support disclosed by Yan, because Yan discloses, in a process that is analogous to Reiβner et al., that the support is a solution to this problem".

The Appellant respectfully disagrees with these statements. Hydrogen peroxide is known to decompose on a support, especially one with a large surface area. Moreover adsorption of a catalyst thereon would have led the skilled artisan to expect an increase in this decomposition of hydrogen peroxide. Yan clearly appreciated this fact in his statement on col. 8 lines 11-13 for use in his invention, which requires the use of a support, wherein he states that "Hydrogen peroxide is not contemplated to be intentionally added as a source of oxygen for this process." Hence Yan's solution to his problem of using a support was appropriate for his use of air but was not contemplated in conjunction with the use of hydrogen peroxide.

The Appellant would thus not have been motivated to utilize the support of Yan in the process described by Reiβner to solve the problem faced by the Appellant. Rather he would have been inhibited from even considering the use of hydrogen peroxide in a process employing a support associated with transition metal ions.

3. The Examiner has argued on page 6 lines 8-12 that "Appellant cannot show non-obviousness by attacking references individually where, as here, the rejection is based on a combination of references. Reiβner et al. disclose the use of hydrogen peroxide as the oxidant for oxidising aqueous solutions containing thiosulfate, and one of ordinary skill in the art would have been guided by Reiβner et al. for the choice of oxidant".

Yan teaches "away" from the invention by saying that "Hydrogen peroxide is not contemplated to be intentionally added as a source of oxygen for this process." Hence there is no motivation to combine it Reiβner et al., which teaches the use of hydrogen peroxide (only). According to established US case law a combination of art must contain motivational teaching within itself to direct a skilled artisan to make the combination. A "teaching away" is clear evidence that that motivational teaching is missing. Thus, it is submitted that it is quite proper to attack both the individual references and the combination. Even if it were considered that combining the art were appropriate (which is denied) it is submitted that the combined teaching is still deficient by not rendering obvious the Appellant's invention for the reasons stated.

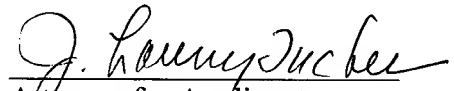
4. The Examiner has referred, on page 6, line 18 to page 7, line 2 of his Answer, to the Appellant's Appeal Brief, in which it is stated, by reference to col.11 lines 25-26 of Yan, that catalysts containing copper, cobalt, molybdenum and tungsten alone on activated carbon are ineffective. (The invention disclosed and claimed by Yan relates to the use of a combination of metals or metal compounds on a support). The Examiner states that "this disclosure in Yan is for one particular embodiment of the invention, which is the treatment of refinery

waste water, and Yan discloses that the metals alone on the support are ineffective for this specific application".

The Appellant submits with respect that it is inappropriate for the Examiner to disregard a clear teaching away for the use of a single metal or metal compound as relating to a specific embodiment on the one hand, whilst insisting that one can extrapolate from the treatment of petroleum refinery waste to photographic effluent on the other hand. If the method disclosed in Yan is deemed applicable to the treatment of photographic waste and the skilled artisan might be so directed, then it is reasonable that he would also consider as pertinent clear directions given in that specification that a certain procedure would be unlikely to be effective.

The Board of Patent Appeal and Interferences is requested to carefully consider the new arguments and the previous arguments presented in the Appeal Brief as a basis for reversing the Final Rejection, with the request that this application should be remanded to the Examiner with instructions to pass the application to issue.

Respectfully submitted,



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